EX 14 PAGE 20

a. *-8i=8.(cos(-$\frac{\pi}{2}$) + $isin(-\frac{\pi}{2})$)

*$\frac{-1+i}{\sqrt{2}} = \frac{-\sqrt{2}}{2} + i\frac{\sqrt{2}}{2}$

$= \cos\left(\frac{3\pi}{4}\right) + i.sin(\frac{3\pi}{4})$

* $3i+\sqrt{3} = \sqrt{3}(1 + i\sqrt{3})$

=$2\sqrt{3}.$ (cos ($\frac{\pi}{3}$)+i.sin($\frac{\pi}{3}$))

- -2,5=2,5.(cos(π)+isin(π))
- $\sqrt{2} - \sqrt{6}i = \sqrt{2}(1 - i\sqrt{3})$

=$2\sqrt{2}.$ (cos ($-\frac{\pi}{3}$)+i.sin($-\frac{\pi}{3}$))

- 5+5i=$5\sqrt{2}$ $(\cos\left(\frac{\pi}{4}\right) + isin(\frac{\pi}{4}))$

b. *$\frac{3(1+i\sqrt{3})}{(1+i)^2} = \frac{6e^{i\frac{\pi}{3}}}{2e^{i\frac{\pi}{2}}} = 3e^{-i\frac{\pi}{6}}$

= 3.(cos(-$-\frac{\pi}{6}$) + $isin(-\frac{\pi}{6})$)

* $\frac{1+i}{1-i} = \frac{(1+i)^2}{2} = i$

$= \cos\left(\frac{\pi}{2}\right) + isin(\frac{\pi}{2})$

* $\left(\frac{1+i\sqrt{3}}{\sqrt{3}+i}\right)^3 = \left(\frac{2e^{i\frac{\pi}{3}}}{2e^{i\frac{\pi}{6}}}\right)^3$

$=\left(e^{i\frac{\pi}{6}}\right)^3 = e^{i\frac{\pi}{2}}$

$=\cos\left(\frac{\pi}{2}\right) + isin(\frac{\pi}{2})$

* (1-i)^5(1+i)^3=$4\sqrt{2}e^{-i5\frac{\pi}{4}}.2\sqrt{2}e^{i3\frac{\pi}{4}}$

$=16e^{-i\frac{\pi}{2}}$

$=16(\cos\left(-\frac{\pi}{2}\right) + isin(-\frac{\pi}{2})$

EX 15 PAGE 20

1) $|Z_1| = |1 + i| = \sqrt{2}$

Arg(Z_1)=$\frac{\pi}{4}$

$|Z_2| = |\sqrt{3} - i| = 2$

Arg(Z_2)=$-\frac{\pi}{6}$

2) $Z_1.Z_2$=(1+i)($\sqrt{3} - i$)

=(1+$\sqrt{3}$)+i(-1+$\sqrt{3}$)

$Z_1.Z_2 = 2.\sqrt{2}e^{i\left(\frac{\pi}{4}-\frac{\mu}{6}\right)} = 2\sqrt{2}e^{i\frac{\pi}{12}}$

$= 2\sqrt{2}\,(\cos\left(\frac{\pi}{12}\right) + isin(\frac{\pi}{12}))$

3) $2\sqrt{2}\,(\cos\left(\frac{\pi}{12}\right) + isin(\frac{\pi}{12})) =$

$(1 + \sqrt{3}) + i(-1 + \sqrt{3})$

$\Rightarrow\cos\left(\frac{\pi}{12}\right)=\frac{1+\sqrt{3}}{2\sqrt{2}}$

et $sin(\frac{\pi}{12})) = \frac{-1+\sqrt{3}}{2\sqrt{2}}$

EX 16 PAGE 20

1. $|Z_1| = |-1 + i\sqrt{3}| = 2$

Arg(Z_1)=$\frac{2\pi}{3}$

$|Z_2| = |1 + i| = \sqrt{2}$

Arg(Z_2)=$\frac{\pi}{4}$

2.

$$\left|\frac{z_1}{z_2}\right| = \frac{|z_1|}{|z_2|} = \frac{2}{\sqrt{2}} = \sqrt{2}$$

$$\arg(\frac{z_1}{z_2}) = \arg(z_1) - \arg(z_2) = \frac{2\pi}{3} - \frac{\pi}{4} = \frac{5\pi}{12}$$

Qarray.tn -Aqra Blech- Qarray.tn